ADDITIONS TO THE PAPILIONOIDEA (LEPIDOPTERA) OF THE REVILLAGIGEDO ISLANDS, MEXICO[1]

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ABSTRACT: Five species of butterflies are reported from the Revillagigedo Islands, Mexico, for the first time: *Phoebis agarithe* (Pieridae); *Chlorostrymon simaethis*, *Leptotes marinus*, and *Hemiargus ceraunus* (Lycaenidae); and *Danaus gilippus* (Nymphalidae). These new records increase to ten the number of Papilionoidea recorded from this archipelago.

The Revillagigedo Archipelago is comprised of four islands located approximately 500 km SSW of Cabo San Lucas, Baja California Sur, and about 600 km W of Cabo Corrientes, Jalisco. Politically, the islands belong to the state of Colima, Mexico. The islands are oceanic and volcanic in origin. Socorro is the largest and most diverse topographically; Clarion and San Benedicto are considerably smaller; and Roca Partida is little more than a rock jutting from the sea (Palacios-Vargas, Llampallas, and Hogue 1982).

Vazquez (1958, 1959, 1960) cited five butterfly taxa from the Revillagigedos, four of which represent endemic subspecies: *Battus philenor insularis* (Vazq., 1956) (Papilionidae), *Strymon melinus clarionensis* (Heid., 1933) (Lycaenidae), *Strymon columella clarionica* (Vazq., 1958) (Lycaenidae), and *Erynnis funeralis* (Scudder & Burgess, 1870) (Hesperiidae), all from Clarion; and *Strymon columella socorroica* (Vazq., 1958) (Lycaenidae) from Socorro. Palacios-Vargas *et al.* (1982) added a sight record of the widespread Neotropical *Phoebis sennae* (Linnaeus, 1758) (Pieridae) from Socorro. The purpose of this note is to present the first records of five additional species of Papilionoidea from Socorro Island, and the first capture record of *Phoebis sennae*. All of these are widespread Neotropical species that occur commonly on the Mexican mainland. Depositories are abbreviated as follows: LACM, Natural History Museum of Los Angeles County, Los Angeles, California; SDNHM, San Diego Natural History Museum, San Diego, California. All specimens were determined by the author.

PIERIDAE

Phoebis sennae (Linnaeus): Socorro Island, Bahia Braithwaite, 1M, 16 April 1987, D. K. Faulkner (SDNHM). The specimen is best referred to *P. sennae marcellina* (Cramer), the common mainland subspecies.

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Phoebis agarithe (Boisduval): Socorro Island, Bahia Braithwaite, 1M, 16 April 1987, D. K. Faulkner (SDNHM). Identification of the specimen is based on the straight, unbroken discal line of the ventral forewing (Brown 1929; Howe 1975). The single specimen is in poor condition inhibiting subspecific assignment.

LYCAENIDAE

Chlorostrymon simaethis (Drury): Socorro Island, 3200', 12F, 15 April 1955, E. Y. Dawson (LACM). The specimens are phenotypically indistinguishable from *C. simaethis sarita* (Reakirt), the common Mexican mainland subspecies (Nicolay 1980; Johnson 1989).

Leptotes marinus (Reakirt): Socorro Island, Bahia Braithwaite, 2M, 1F, 16 April 1987, D. K. Faulkner (SDNHM).

Hemiargus ceraunus (Fabricius): Socorro Island, 3200', 1F, 18 April 1955, E. Y. Dawson (LACM). I follow Nabokov (1945) and Clench (1965), treating *H. ceraunus* as distinct from *H. hanno* (Stoll). Intra-population variability in *H. ceraunus* inhibits meaningful use of trinomials in this species.

NYMPHALIDAE

Danaus gilippus (Cramer): Socorro Island, naval base at Cornwallis Bay, 1F, 27 November 1988, K. Kaiser & J. Johnston (LACM).

DISCUSSION

No butterfly species has been recorded from either San Benedicto or Roca Partida. Of the ten species recorded from Socorro (n=7) and Clarion (n=4), it is surprising that only one is known from both islands, i.e. *Strymon columella*, represented by an endemic subspecies on each island. It is likely that the absence of additional taxa in common to both islands reflects insufficient sampling rather than ecological equilibria.

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BOOK REVIEW

BIRD BLOW FLIES (*PROTOCALLIPHORA*) IN NORTH AMERICA (DIPTERA: CALLIPHORIDAE) WITH NOTES ON THE PALEARCTIC SPECIES. 1989. C.W. Sabrosky, G.F. Bennett, T.L. Whitworth. Smithsonian Institution Press, Washington, D.C. and London. 312 pp. $16.95.

This monographic revision of a blowfly genus whose larvae feed upon the blood of nestlings of many passerine birds in both enthralling and very informative. This is the third revision of the genus in the last 60 years. In the last previous treatment of its included species, Hall (1948. The Blowflies of North America. Thos. Say Foundation, p 179-201) flatly declared that "*Protocalliphora* . . . does not occur in North America." The current authors have painstakingly settled this matter. Although misidentified type specimens and designated lectotypes have led to some confusion concerning the proper generic name, North American usage and the current work will certainly establish *Protocalliphora* as the correct generic name of the bird blowflies. Species in the genus possess a fascinating biological association with birds, and their larvae have unique anatomical attributes to facilitate their 'parasitic' mode of feeding. While Hall (1948) recognized 10 species, this work recognizes 26 species, 15 of which are described as new, and 2 species that are now known to be Holarctic in distribution, *P. chrysorrhoea* and P. *braueri*. Each species treated here is given a complete description, including a diagnosis, description of male and female, descriptions of the immature stages, particularly the puparium, the material examined, with the type series for new species, distribution informatioin, and ecology and biology, along with appropriate remarks. These descriptions present admirable models of what every entomologist would desire to have in a revision. Unfortunately, larval cephalopharyngeal skeletons and the prothoracic fringe of the mature larvae are not illustrated; one must refer to Hall (1948, Pl. 38) for these details. Also, the details of the posterior spiracles and the integumentary armature from the puparia are not easily resolved in the halftone illustrations. Certainly, this work will be useful to entomologists, ornithologists, ecologists, and field workers. After over 30 years of work, study, and compilation, the authors have presented an excellent book.

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